REMARKS

Claims 11-16 are pending in the application. In the Office Action of September 12, 2002, the Examiner made the following disposition:

A.) Objected to the Title of the Invention.

B.) Objected to the Abstract of the Disclosure.

C.) Objected to claim 11 for informalities.

D.) Rejected claim 16 under 35 U.S.C. §112, second paragraph.

E.) Rejected claims 11 and 12 under 35 U.S.C. §102(b) as being anticipated by *Chae*.

F.) Rejected claims 13 and 14 under 35 U.S.C. §103(a) as being unpatentable over *Chae* in view of *Kawashima*.

G.) Rejected claims 15 and 16 under 35 U.S.C. §103(a) as being unpatentable over *Chae* in view of *Noguchi et al.*

Applicants respectfully traverse the rejections and address the Examiner's disposition below.

A.) Objection to the Title of the Invention:

The Title of the Invention has been amended as per the Examiner's request to overcome the objection. Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**". No new matter is added by the present amendment.

Applicants respectfully submit the objection has been overcome and request that it be withdrawn.

B.) Objection to the Abstract of the Disclosure:

The Abstract of the Disclosure has been amended as per the Examiner's request to overcome the objection.

Applicants respectfully submit the objection has been overcome and request that it be withdrawn.

C.) Objection to claim 11 for informalities:

Claim 11 has been amended as per the Examiner's request to overcome the objection.

Applicants respectfully submit the objection has been overcome and request that it be withdrawn.

D.) Rejection of claim 16 under 35 U.S.C. §112, second paragraph:

Claim 16 has been amended as per the Examiner's request to overcome the rejection.

Applicants respectfully submit the rejection has been overcome and request that it be withdrawn.

E.) Rejection of claims 11 and 12 under 35 U.S.C. §102(b) as being anticipated by *Chae*:

Applicants respectfully disagree with the rejection.

Applicants' independent claim 11 has been amended to clarify that the longitudinal direction and the lateral direction are across the surface of the insulating substrate, and to clarify that the overlapping portions of the irradiated regions have a band shape along the longitudinal direction. As claimed in claim 11, the laser annealing apparatus intermittently irradiates a pulsed laser beam formed in a band-shape along the longitudinal direction of the insulating substrate. It simultaneously moves the laser beam relative to the insulating substrate in the lateral direction with a specific movement pitch while partially overlapping regions irradiated with the laser beam to each other. The movement pitch of the laser beam is set at a value equal to an arrangement pitch of the thin film transistors or at a value larger by a factor of an integer than the arrangement pitch of the thin film transistors. The insulating substrate is previously positioned such that any one of boundaries of the overlapped portions of the irradiated regions is not overlapped on a channel region of each of the thin film transistors.

Since the overlapped portions of Applicants' claimed irradiated regions are not located on a channel region of any of the thin film transistors, any crystal defects present at the boundaries of the irradiated regions are not contained in the channel regions of the thin film transistors. Therefore, thin film transistors formed according to Applicants' claim 11 have adequately high current drive abilities.

This is clearly unlike *Chae*. As described above, Applicants' laser beam is moved in a lateral direction at a movement pitch such that the laser beam overlaps. The overlapping portions of the irradiated regions have a band shape along the longitudinal direction. Referring to *Chae* Figure 9, this is unlike *Chae* which moves its laser beam in a lateral direction such that overlapping portions of the irradiated regions have a band shape along the lateral direction. For at least this reason, *Chae* fails to disclose or suggest Applicants' claim 11.

Further, unlike Applicants' claim 11, *Chae* fails to disclose or even suggest that its overlapping regions are oriented in a longitudinal direction between channel regions. As shown in *Chae* Figure 5, *Chae* teaches a continuous channel region 22 formed along the entire scanning length of its substrate in the lateral direction. Accordingly, unlike Applicants' claim 11, *Chae* could not disclose or suggest longitudinally-oriented overlapping regions that are between channel regions, because *Chae* discloses a continuous channel region.

Further, Applicants claim crystal growth in both the longitudinal direction and the lateral direction across the surface of the insulating substrate. In contrast to this, *Chae* discloses crystal growth in a longitudinal direction of the substrate and in a vertical direction (*Chae* Figure 5A). Nowhere does *Chae* disclose or suggest crystal growth in a lateral direction of its substrate. Therefore, for this reason also, *Chae* fails to disclose or suggest Applicants' claim 11.

Claim 12 depends directly or indirectly from claim 11 and is therefore allowable for at least the same reasons that claim 11 is allowable.

Applicants respectfully submit the rejection has been overcome and request that it be withdrawn.

F.) Rejection of claims 13 and 14 under 35 U.S.C. §103(a) as being unpatentable over *Chae* in view of *Kawashima*:

Applicants respectfully disagree with the rejection.

Applicants' independent claim 11 is allowable over *Chae* as discussed above. *Kawashima* still fails to disclose or suggest overlapping irradiated regions that are oriented in a longitudinal direction between channel regions. Therefore, *Chae* in view of *Kawashima* still fails to disclose or suggest claim 11.

Claims 13 and 14 depend directly or indirectly from claim 11 and are therefore allowable for at least the same reasons that claim 11 is allowable.

Applicants respectfully submit the rejection has been overcome and request that it be withdrawn.

G.) Rejection of claims 15 and 16 under 35 U.S.C. §103(a) as being unpatentable over *Chae* in view of *Noguchi et al.*:

Applicants respectfully disagree with the rejection.

Applicants' independent claim 11 is allowable over *Chae* as discussed above. *Noguchi et al.* still fails to disclose or suggest overlapping irradiated regions that are oriented in a longitudinal direction between channel regions. Therefore, *Chae* in view of *Noguchi et al.* still fails to disclose or suggest claim 11.

Claims 15 and 16 depend directly or indirectly from claim 11 and are therefore allowable for at least the same reasons that claim 11 is allowable.

Applicants respectfully submit the rejection has been overcome and request that it be withdrawn.

CONCLUSION

In view of the foregoing, it is submitted that claims 11-16 are patentable. It is therefore submitted that the application is in condition for allowance. Notice to that effect is respectfully requested.

Respectfully submitted,

(Reg. No. 45,034)
Christopher P. Rauch
SONNENSCHEIN, NATH & ROSENTHAL
P.O. Box #061080
Wacker Drive Station - Sears Tower
Chicago, IL 60606-1080
Telephone 312/876-2606
Customer #26263
Attorneys for Applicant(s)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Title of the Invention:

Please replace the Title of the Invention with the following replacement Title of the Invention:

--[PROCESS OF FABRICATING] THIN FILM SEMICONDUCTOR DEVICE--

In the Abstract of the Disclosure:

Please replace the Abstract of the Disclosure with the following replacement Abstract of the Disclosure:

--[A process of fabricating a thin film semiconductor device includes the steps of: forming a semiconductor thin film on an insulating substrate; annealing the semiconducting thin film by irradiating a laser beam thereto, thereby crystallizing the semiconducting thin film; and integratedly forming thin film transistors, each including the semiconducting thin film as an active layer, with a specific arrangement pitch. In the laser annealing step, a pulsed laser beam formed in a band-shape is intermittently irradiated to the insulating substrate and it is simultaneously moved relative to the insulating substrate in the lateral direction with a specific movement pitch while partially overlapping regions irradiated with the laser beam to each other. In this case, the movement pitch of the laser beam is set at a value equal to an arrangement pitch of the thin film transistor or at a value larger by a factor of an integer than the arrangement pitch, and the insulating substrate is previously positioned such that any one of boundaries of the partially overlapped regions irradiated with the laser beam is not overlapped on a channel region of each thin film transistor.] A laser annealing apparatus for fabricating a thin film semiconductor device integratedly formed with thin film transistors each of which includes a semiconducting thin film formed on the surface of an insulating substrate spread in longitudinal and lateral directions and then crystallized. A band-shaped pulsed laser beam irradiates the insulating substrate along the longitudinal direction. The laser beam is simultaneously moved in the lateral direction with a specific movement pitch while partially overlapping regions irradiated with the laser beam. The movement pitch of the laser beam is set at a value equal to an arrangement pitch of the thin film transistors or at a value larger by a factor of an integer than the arrangement pitch. The insulating substrate is previously positioned such that the boundaries of the partially overlapped irradiated regions are not overlapped on a channel region of any of the thin film transistors.--

In the Claims:

Please amend claims 11 and 16 as follows:

11. (Amended) A laser annealing apparatus used for fabrication of a thin film semiconductor device integratedly formed with a plurality of thin film transistors each of which includes as an active layer a semiconducting thin film which is formed on [the] a surface of an insulating substrate spread in longitudinal and lateral directions across the surface of the insulating substrate and then crystallized, comprising:

means for intermittently irradiating a pulsed [leaser] laser beam formed in a band-shape along the longitudinal direction of the insulating substrate to the insulating substrate, and simultaneously moving the laser beam relative to the insulating substrate in the lateral direction with a specific movement pitch while partially overlapping regions irradiated with the laser beam to each other, the overlapped portions of the irradiated regions having a band shape along the longitudinal direction;

means for setting the movement pitch of the laser beam at a value equal to an arrangement pitch of the thin film transistors or at a value larger by a factor of an integer than the arrangement pitch of the thin film transistors; and

means for previously positioning the insulating substrate such that any one of boundaries of the [partially] overlapped portions of the irradiated regions is not overlapped on a channel region of each of the thin film transistors.

16. (Amended) A laser annealing apparatus according to claim 15, wherein said controller drives said motor on the basis of an output of [said] a detector supplied to said controller, the detector is for irradiating light onto the surface of an alignment mark formed on the insulating substrate and detecting an amount of the light reflected from the surface of the alignment mark.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited as First Class Mail in an envelope addressed to Asst. Commissioner for Patents, Washington, D.C. 20231 on December 7, 2002.

Christopher P. Rauch (Reg. No. 45,034)

Christopher P. Rauch